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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/623,286

07/18/2003

Brian Michael Finn

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EXAMINER

FAULK, DEVONA E

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/623,286	Applicant(s) FINN ET AL.	
	Examiner DEVONA E. FAULK	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 7 and 8 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 9-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/15/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/18/2007 have been fully considered but they are not persuasive. Regarding claims 1,3,4,26,29 and 30, the applicant asserts that prior art Kawamura does not teach adjusting the bandpass filter at least as a function of a derivative of the power of a signal with respect to frequency. Examiner maintains that the reference teaches of adjusting the bandpass filter at least as a function of a derivative of the power of a signal with respect to frequency. Kawamura discloses adjusting the bandpass filter at least as a function of a derivative of the signal with respect to frequency (column 5, lines 48-54; abstract; the derivative represents an infinitesimal change in a function with respect to one of its variables; Kawamura discloses adjusting the howl suppressor based on a power of the microphone signal as a function of frequency). The examiner is maintaining the rejection set forth in the previous office action.

2. Claims 5, 7 and 8 were indicated as allowable in the previous office action and remain in allowable form.

3. There was a double patent rejection set forth in the previous office action. The applicant has stated in the response that they are prepared to file a terminal disclaimer upon withdrawal of all other rejections.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

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unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-4, 6, 9, 10, 25-34 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-4, 29-36 of copending Application No. 10/360889. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: The claims of 10/623286 are broader than claims 1-4, 29-36 of 10/360889 and as such anything that reads on the narrower claims of 10/360889 would read on the broader claims.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4,25-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawamura et al. (US 5,442,712).

Claims 1,3,4,26,29 and 30 share common features.

Regarding claim 1, Kawamura discloses a method for operating a voice-supported system in a motor vehicle, the system including at least one microphone (1, Figure 1), at least one loudspeaker (5, Figure 1), and a bandpass filter (howling suppressor 6, Figure 1) arranged between the microphone and the loudspeaker, comprising:

determining a power of a signal as a function of frequency (abstract; column 5, lines 42-54); and

adjusting the bandpass filter at least as a function of a derivative of the signal with respect to frequency (column 5, lines 48-54; abstract; the derivative represents an infinitesimal change in a function with respect to one of its variables; Kawamura discloses adjusting the howl suppressor based on a power of the microphone signal as a function of frequency).

All elements of claim 2 and 25 are comprehended by the rejection of claim 1.

Claims 26,29 and 30 are rejected using Kawamura as applied above to claim 1.

All elements of claims 27 and 28 are comprehended by the rejection of claim 26 (Kawamura discloses that the howl suppressor contains a notch filter).

Furthermore, regarding claims 3 and 4, Kawamura discloses determining a local maximum of the power of the signal as a function of the derivative of the power of the signal with respect to frequency (abstract).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (US 5,442,712) in view of Hanajima (US 6,125,187).

Regarding claims 9 and 10 Kawamura fails to disclose determining all local maxima in one frequency range and determining a global maximum in the frequency range. Hanajima teaches a howling eliminating device including a band eliminating filter group 32 that does frequency analysis wherein wide frequency bands are searched for howling and then a suspected wide frequency and is narrowed and further searched for howling (abstract). It would have been obvious to modify Kawamura by determining all local maxima in one frequency range and determining a global maximum do that howling can be detected in a shorter period of time (Hanajima, abstract).

10. Claims 11-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (US 5,442,712) in view of Ando (US 6,252,969).

Regarding claims 11-24, Venkatesh discloses adjusting the bandpass filter (see page 10 for description of what Ando discloses, how it applies to claims 11-24 and motivation to combine with Venkatesh).

Kawamura fails to disclose wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio at least of the power of the signal at a frequency at which the power of the signal is a maximum to an average value of the power of the signal at additional frequencies of the signal is greater than a feedback-power threshold (claim 11);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio at least of the power of the signal at a frequency at which the power of the signal is a maximum to an average value of the power of the signal at additional frequencies of the signal is greater than a feedback-power threshold for longer than a time-ratio-threshold (claim 12);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum plus the power of the signal at frequencies of the signal adjacent to the frequency at which the power of the signal is a maximum to an average value of the power of the signal at additional frequencies of the signal is greater than a feedback-power threshold (claim 13);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum plus the power of the signal at frequencies of the signal adjacent to the frequency at which the power of the signal is a maximum to an average value of the power of the signal at additional frequencies of the signal is greater than a feedback-power threshold for longer than a time-ratio-threshold (claim 14);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum plus the power of the signal at a frequency of the signal that is directly adjacent to the frequency at which the power of the signal is a maximum and at which the power is greater than at a frequency that is also directly adjacent to the frequency at which the power of the signal is a maximum to an average value of the power of the signal at additional frequencies of the signal is greater than a feedback-power threshold (claim 15);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum plus the power of the signal at a frequency of the signal that is directly adjacent to the frequency at which the power of the signal is a maximum and at which the power is greater than at a frequency that is also directly adjacent to the frequency at which the power of the signal is a maximum to an average value of the power of the signal at additional frequencies of the signal is

greater than a feedback-power threshold for longer than a time-ratio-threshold (claim 16);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum plus the power of the signal at a frequency of the signal that is directly adjacent to the frequency at which the power of the signal is a maximum and at which the power is greater than at a frequency that is also directly adjacent to the frequency at which the power of the signal is a maximum to an average value of the power of the signal of all further frequencies of the signal is greater than a feedback-power threshold (claim 17);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum plus the power of the signal at a frequency of the signal that is directly adjacent to the frequency at which the power of the signal is a maximum and at which the power is greater than at a frequency that is also directly adjacent to the frequency at which the power of the signal is a maximum to an average value of the power of the signal of all additional frequencies of the signal is greater than a feedback-power threshold for longer than a time-ratio-threshold (claim 18);

further comprising determining the feedback-power threshold as a function of an output signal of the bandpass filter (claim 19);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum to an average value of the power of the signal at further frequencies at which the power of the signal includes a local maximum is greater than a power threshold (claim 21);

wherein the bandpass filter is adjusted in the adjusting step to block a portion of the signal at a notch frequency only when a ratio of the power of the signal at a frequency at which the power of the signal is a maximum to an average value of the power of the signal at all further frequencies at which the power of the signal includes a local maximum is greater than a power threshold (claim 22);

Ando discloses calculating the power of adjacent frequency bands of the input signal and their ratios compared to power thresholds and determining the feedback-power threshold as a function of an output signal of the bandpass filter (column 4, line 13-column 5, line 36; Figure 1). It would have been obvious to modify claims 11-19,21,and 22 to adjust the bandpass filter as recited respectively in claims 11-24 in order to prevent howling which can at times accompany a sound produced by a loudspeaker.

Regarding claims 20,23 and 24, Kawamura as modified by Ando fail to discloses wherein the power threshold is one of between 20 and 50 and between 30 and 40. The examiner asserts that the value of the power threshold is designer's choice. It would have been obvious to modify Kawamura so that the power threshold is between 20 and 50 or 30 and 40 in order to fulfill some desired design specification.

Allowable Subject Matter

11. Claims 5,7 and 8 are allowed.

Regarding claim 5, the prior art or combination thereof fails to disclose or make obvious further comprising: forming a slope signal from a first derivative of the power of the signal with respect to the frequency having a first binary value when the first derivative of the power of the signal with respect to frequency is greater than or equal to zero and a second binary value when the first derivative of the power of the signal with respect to frequency is less than zero; and determining the local maximum of the power of the signal as a function of a first derivative of the slope signal.

Regarding claim 7, the prior art or combination thereof fails to disclose or make obvious further comprising forming a slope signal having a first binary value when a first derivative of the power of the signal with respect to frequency is greater than or equal to zero and a second binary value when the first derivative of the power of the signal with respect to frequency is less than zero, the bandpass filter adjusted in the adjusting step as a function of the slope signal.

Claim 8 is allowed due to dependency on claim 7.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DEF

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615